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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,745	06/13/2006	Yutaka Murakami	L9289.06159	8872

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Dickinson Wright PLLC  
James E. Ledbetter, Esq.  
International Square  
1875 Eye Street, N.W., Suite 1200  
Washington, DC 20006

EXAMINER
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KASSA, ZEWDU A

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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05/17/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,745	<b>Applicant(s)</b> MURAKAMI ET AL.	
	<b>Examiner</b> ZEWDU KASSA	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 35-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/15/2010</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

1. This office action is in response to communication (IDS) filled on 03/15/2009. Claims 35-49 are pending on this application.

### ***Allowable Subject Matter***

**The indicated allowability of claims 35-49 is withdrawn in view of the newly discovered reference(s) to Gupta (WO/03/047118), IDS submitted by applicant.**

**Rejections based on the newly cited reference(s) follow.**

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Gupta (WO 03/047118 A2).**

4. As per claim 43, Gupta teaches a transmission apparatus comprising: an interleaver that: stores a first data sequence (Gupta, Fig. 2B 214a), and a second data sequence that is different from the first data sequence (Gupta, Fig. 2B 214t), the first and second data sequences being encoded, transmitting data sequences (Gupta, Fig. 2B 212a 212t); interleaves the first data sequence into a first interleaved data sequence using a first interleaving pattern in which an output order pattern of the first data sequence is different from an input order pattern of the first data sequence (Gupta, Fig. 2B 214a); and interleaves the second data sequence into a second interleaved data sequence using a second interleaving pattern in which an output order pattern of the second data sequence is different from the output order pattern of the first data sequence (Gupta, Fig. 2B 214t); a modulator that: modulates the first interleaved data sequence into a first modulated symbol; and modulates the second interleaved data sequence into a second modulated symbol (Gupta, Fig. 2B 116b, Para [0035], [0036]); and a transmitter that: generates a first orthogonal frequency division multiplexing symbol mapped over a plurality of subcarriers, from the first modulated symbol (Gupta, Para [0039] "OFDM", Fig. 2B 116b, Para [0035], [0036]); generates a second orthogonal frequency division multiplexing symbol mapped over a plurality of subcarriers, from the second

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modulated symbol (Gupta, Para [0039] "OFDM", Fig. 2B 116b, Para [0035], [0036]); transmits the first orthogonal frequency division multiplexing symbol from a first antenna in a specific frequency band and time; and transmits the second orthogonal frequency division multiplexing symbol from a second antenna in the specific frequency band and time, shared in common with the first orthogonal frequency division multiplexing symbol (Gupta, Fig. 2B item 122 124, Para [0039] "OFDM", Para [0031], Fig. 2B 116b, Para [0035], [0036]).

5. As per claim 44, Gupta teaches the transmission apparatus according to claim 43, wherein: an amount of data interleaved by the first interleaving pattern equals an amount given by multiplying an amount of all subcarriers included in the first orthogonal frequency division multiplexing symbol and used for data transmission, by an amount of bits transmitted by one first modulated symbol (Gupta, Para [0039]); an amount of data interleaved by the second interleaving pattern equals an amount given by multiplying an amount of all subcarriers included in the second orthogonal frequency division multiplexing symbol and used for data transmission, by an amount of bits transmitted by one second modulated symbol; and the amount of data interleaved by the first interleaving pattern and the amount of data interleaved by the second interleaving pattern are the same (Gupta, Para

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[0039])).

6. As per claim 45, Gupta teaches the transmission apparatus according to claim 43, wherein the first interleaving pattern and the second interleaving pattern are selected to be uncorrelated between the antennas (Gupta, Fig. 2B 214 Para [0035] "... separate coding and modulation ...").

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta (WO 03/047118 A2) in view of Dagan (US 20030105996).**

9. As per claim 46, Gupta teaches the transmission apparatus according to claim 43 (see claim 43).

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10. Gupta does not explicitly teach wherein the interleaver interleaves the first orthogonal frequency division multiplexing symbol to be transmitted from the first antenna every  $x$  symbols and interleaves the second orthogonal frequency division multiplexing symbol to be transmitted from the second antenna every  $y$  ( $x/y$ ) symbols. **Dagan** teaches wherein the interleaver interleaves the first orthogonal frequency division multiplexing symbol to be transmitted from the first antenna every  $x$  symbols and interleaves the second orthogonal frequency division multiplexing symbol to be transmitted from the second antenna every  $y$  ( $x/y$ ) symbols (Dagan, Fig. 6). Thus, it would have been obvious to one having ordinary skill in the art, at the time of the invention was made to implement the instant limitation, as taught by Dagan in to Gupta because Gupta teaches and suggests interleaving in general (Gupta, Para [0031]) and Dagan teaches the benefit of interleaving as claimed by the instant limitation so that to provide efficient method of interleaving that would improve the performance of the communication system (Dagan, Para[0006] [0026]). Furthermore, it would have been obvious to try, for one having ordinary skill in the art, because interleaving is a process of rearranging data in some kind of uniform manner so that on the receiver side error can be corrected easily if the expected pattern affected by noise.

11. As per claim 47, Gupta in view of Dagan teaches the transmission apparatus according to claim 46, wherein the interleaver performs interleaving in a block size equal to a least common multiple of  $x$  and  $y$  (Dagan, Fig. 6).

12. As per claim 48, Gupta in view of Dagan teaches the transmission apparatus according to claim 46, wherein the interleaver performs interleaving by making at least one of  $x$  and  $y$  a prime number (Dagan, Fig. 6).

13. As per claim 49, Gupta in view of Dagan teaches the transmission apparatus according to claim 46, wherein the interleaver performs interleaving by providing an offset in a frequency direction or in a time direction between block interleaving for the first orthogonal frequency division multiplexing symbol to be transmitted from the first antenna, and block interleaving for the second orthogonal frequency division multiplexing symbol to be transmitted from the second antenna (Dagan, Para [0031], Fig. 6).



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14. Regarding claims 35-42 are similarly analyzed as claims 43-49 respectively.

**15. *“In re claims 35-42, Gupta and Gupta in view of Dagan discloses a transmission method as claimed because under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claims, then the method claimed will be considered to be anticipated by the prior art device. When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324,231 MPEP 2112.02”***

### **Conclusion**

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 3/15/2010 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZEWDU KASSA whose telephone number is (571)270-5253. The examiner can normally be reached on Monday - Friday (7:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571 272 3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611